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ABSTRACT

This paper discusses services and technology offered to remote sites by the Curtin University of Technology (Australia) Library and Information Service. The following topics are covered: (1) imperatives driving the library to reticulate scholarly electronic information services to clients wherever they are, including the growth of distance education; (2) services offered, including the library's World Wide Web site; (3) barriers faced by the library and its clients related to demographics and communications; (4) strategies and solutions being put in place to overcome these barriers, including state government initiatives, universal telephone service, educational television, and telecenters and MITEs (Modular Interactive Telecommunications Environments); and (5) information/technology transfer, including precautions for transferring technologies to developing communities. (MES)

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AVOIDING THE REEFS AND RIPS WHILE RIDING A RELEVANT TECHNOLOGY WAVE INTO RURAL REGIONS

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Overview

Apologies, Chair for inflicting this alliterative title on you to read out, but it's probably easier than the old tongue twister about the ragged rascals running round rugged rocks on which it was based. Apologies too from my co-presenter, Vicki Williamson, our University Librarian, who was unable to make the conference due to work commitments.

What I'll be covering in this session is:

- A number of imperatives that are driving Curtin University's Library and Information Service to reticulate our scholarly electronic information services to our clients wherever they are;
- What services we are offering our clients;
- What barriers our clients and ourselves face; and
- Strategies and solutions that are being put in place to overcome these barriers.

This paper draws on evidence that shows a low uptake of data communications usage in regional Western Australia and we urge caution in getting carried away at this stage about offering "virtual" library services, particularly in developing countries.

I'll conclude with some remarks on an appropriate approach to technology/information transfer from so called developed countries to developing countries.

The Imperatives

Let's have a look at what's driving Curtin's Library and Information Service (Curtin LIS) to offer more and more services digitally.
Like most other Australian universities we are experiencing strong annual growth in the number of students studying in the distance education mode. Many of these, however are not truly "distant", but live within the metropolitan area, thus linking in with the client focused trend to provide open and flexible learning opportunities. Nevertheless there are significant numbers of our clients scattered across rural and remote areas that have to be served by the Curtin LIS. We also have remote service delivery sites at regional campuses hundreds of kilometres from Perth. (These are in Northam 90 km from Perth, Kalgoorlie, 600kms distant and at Esperance, the most remote, at 900 kms away). To serve these sites adequately with on-line information and to keep our library systems running in realtime over such distances requires adequate bandwidth and reliability. Looking further afield there has also been steady growth in the number of students studying offshore - a growth fuelled by the Asian currency crisis as it is cheaper for these students to study from their home countries than come to Perth. Our university, through its current strategic plan, has also emphasised the need for more resource based, independent

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learning, which carries a significant potential impact for library and information services.

The Offerings

As part of the University's World Wide Web home page, our Office of Educational Advancement maintains Curtin Learning Link, aimed at distance education students. These pages offer links to LISWeb, the Curtin LIS presence on the Web. We use LISWeb for two main purposes - promotion and as a platform to access our digital offerings. In line with the LIS strategic plan, that states that we will prefer electronic formats to print, the portion of money spent on these resources has grown to 15% of our acquisitions budget. This has resulted in more than 200 databases, with as many as possible linking to full text material, being on offer. The university is also emphasising the need to offer more and more courses on-line and when this takes off we trust that use of LIS electronic scholarly information will also rise dramatically.

Initiatives launched by the Western Australian Group of University Librarians will also require world class telecommunications infrastructure to function properly. A good example is client initiated interlibrary loans, with its concomitant benefit of broadcast searching of catalogues at various local university libraries.

The Barriers

I'll deal with these in two broad categories - demographics and communications.

Demographics

Western Australian (WA) is a vast, sparsely populated area. At 2.5 million square kilometres it covers roughly a third of Australia, and is equivalent in size to South Africa, Namibia and Botswana. Yet it is sparsely populated with only about 500 000 people (2.6% of Australia's population) living outside the Perth metropolitan area. The cost implications of providing adequate infrastructure across an area with these characteristics are frightening.

Western Australia justifiably lays claim to adequate infrastructure as it is a most productive part of Australia, providing some 25% of national exports, with 87% of these coming from the non-metro area, largely from the agricultural and mining sectors.

Some of the more remote farms rely on local generators for power and these don't run all day which can play havoc if one needs to use a modem, for example. Rural power generally is not as reliable as in the metro area.

Communications

WA has near total coverage for standard telephones, although the practice of timed calls in the regional areas acts as a deterrent to Internet use. Mobile phone (or cell phones as you call them here) coverage is much less widespread, probably around 7.5% and there is a lot of pressure being exerted for the extension of this service. Further deregulation of the telephone market leads to providers taking a hard financial look at the viability of expanding coverage, but experience has shown that once the service is available there is a dramatic take up rate.

If we look at communications for data transfer a number of inhibiting factors emerge. The roll out of high capacity and high speed fibre optics occurs from the eastern seaboard of Australia and availability gradually reduces as one moves from the metro, through the regional, rural and remote areas. Fax and data communications are also hampered by some outdated telephone exchanges that have not yet been upgraded to digital. In addition to the timed calls issue mentioned earlier, Internet use is also inhibited by most Information Service Providers (ISPs) being located in major regional centres, with users incurring distance charges to access them. The ISPs costs are also higher as they have to cover leased line costs, usually to Perth.

Service support and expertise in terms of sales, technical, hardware, software, sales and training also peters out the further one moves from the metro area.

Let's take a look now at some sobering statistics taken from the communications audit [1] mentioned in the overview. This audit, conducted by a consulting group for the WA state government presents a clear picture of telecommunication services in WA. Methodologically sound and detailed, it is based upon a series of local consultations, surveys and interviews with, amongst others, residents, chambers of commerce and businesses. We will only look at a few key findings, reported in May 1997.
In the metro area 21.2% of homes had a fax and 43.4% a computer. 9.1% used modems, 2.0% had a modem and did not use it, while 19.2% intended buying one. In regional homes 17.2% had a fax and 35.6% a computer. 4.5% used modems, 3.9% had a modem and did not use it, while 14.1% intended buying one.

The extremely low use of home modems reported by regional areas is a concern for us and it may indicate that our virtual library offerings can only reach an extremely small portion of the population. (It could be argued that students may make up a large percentage of the 4.5% who do use modems but this has still to be proven.) Some of the major reasons given by those who had computers but not modems also make interesting reading. 60% said they had no need or interest, 16% cited equipment cost, 5% communication cost and 4.5% had "just not got around to it".

Survey results of the business community showed similar disparities between data usage as for home users. In the metro area 79.5% of businesses had a fax, 76% a computer and 17.6% used the Internet for business. In the regional areas 81.1% of businesses had a fax, 59.2% a computer and 7.2% used the Internet for business.

There is a considerable difference between the metro and the regional businesses in terms of Internet usage. Traditional wisdom would argue that the Internet is a mechanism that should effectively reduce the tyranny of distance in these areas, but clearly the barriers mentioned earlier mitigate against uptake of these technologies.

The Strategies

State Government
There is considerable State Government interest in improving rural communications in Western Australia. A major driver is the Deputy Premier of Western Australia, who is also the leader of the predominantly country based National Party. He has established an Information Policy Council (chaired by a prominent Curtin University academic). Appointments are also being made to the newly established Office of Information and Communications. Products of these initiatives to date include the communications audit, a strategic plan covering rural communications [2] and a successful conference "Beyond the Big City - Bridging the Communications Gap" that included participants from across WA using interactive videoconferencing from telecentres.

Universal Service
A further strategy being pursued is to reform the Universal Service Obligation. The principle underlying Universal Service is that all Australians, wherever they live or work, should have reasonable access to a standard telephone service. Interestingly, the Australian Communications Authority has just announced the establishment of a public enquiry to look at the costs benefits and risks to include digital capability as part of the Universal Service Agreement. The review will be completed by mid August 1998. The WA Rural Communications Strategy pre-empted universal service reform in April 1997, calling for a WA minimum Universal Service basket including a world-class telephone service and a digital service of at least 64kb/s.

Capability of this magnitude would obviously go a long way to alleviating current difficulties with digital data transfer.

Educational Television
Educational television is provided through:

- ABC/SBS, which are mainstream broadcast television stations.

- Ed-TV which broadcasts about 10 hours of educational TV through a regional network, sourced from some sectors of the WA higher education sector, including Curtin University.
- Channel 31, the last free-to-air TV channel, that is just becoming available for non-standard use, such as horse racing and education. Once again Curtin intends to play a major role as a shareholder and content provider.
- Westlink, a satellite-based narrowcast interactive TV service that can be received in telecentres and other receiving facilities. Curtin LIS has one of these at our remote service site in Kalgoorlie.

Telecentres and MITEs

Currently there are about 70 telecentres in WA providing satellite receiving terminals, televisions, loudspeaker phones, fax machines, personal computers, modems and general office equipment. Plans are afoot to expand telecentres in WA to 100, funded from the A$ 250 million Federal Government Regional Telecommunications Infrastructure Fund, "Networking the Nation".

This scheme aims to assist economic and social development of regional Australia by funding projects that enhance infrastructure, increase access and promote the use of networked services and reduce disparities with urban areas.
The latest development is in the production of MITEs - Modular Interactive Telecommunications Environments. These include much the same equipment as in telecentres, but in a standardised hardware and software environment. They cost about A$200 000 each, which includes the building and equipment. A WA initiative, plans are afoot to export MITEs to Asia - so much for Australia's strict qurantine regulations!
The above developments are most encouraging and we hope that continued public sector and local community support will see telecentres and MITEs, preferably linked to local libraries, continue to flourish.

Information/Technology Transfer

Before concluding, I would like to spend a few minutes on this important topic. Obviously there are many attractive options available to librarians for taking our virtual libraries to our communities. However, transferring these technologies holus bolus to developing communities is fraught with dangers and difficulties and many grand schemes have failed. Some common sense precautions are the following:

- Understand the environment in which the technology will be introduced
- Determine local needs, priorities - remember the local may have far more pressing priorities than electronic scholarly information
- Look for similar successful applications and follow this pattern rather than attempt to re-invent the wheel
- Determine the local capacity to use the technologies - both in terms of expertise and infrastructure
- Put in place mechanisms that will ensure the investment in technology is maintained - and monitor progress.

Conclusion

We have tried, with this presentation, to point out that even in a highly developed, wealthy country such as Australia many obstacles still have to be removed before the fruits of the digital era can be reaped by all. However, there is hope that as we enter the next millennium the benefits of the information age can be more equitably distributed for all. Let's not get too carried away with much of the hype until then.

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